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Design of a two-element airfoil in a range of angles of attack

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Abstract

A numerical-analytical solution of an inverse boundary-value problem of aerohydrodynamics is obtained for a two-element airfoil in the full formulation, based on the velocity distribution defined on the sought airfoil contours in a range of angles of attack. It is demonstrated that flow separation does not occur in the entire range considered for a specified non-separated velocity distribution on the upper surfaces at the maximum angle of attack and on the lower surface at the minimum angle of attack. An example of constructing a sectional airfoil is given; verification of the results obtained is performed with the use of the Fluent software package. © MAIK/Nauka 2008.

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Keywords

Airfoil, Inverse boundary-value problems, Range of angles of attack